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DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, TULSA DISTRICT

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TULSA DISTRICT GUIDE SPECIFICATION
Includes changes through Notice 5 (June 1995)

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SECTION 02559

BITUMINOUS PRIME COAT

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NOTE: 02559.TD is a modified version of CEGS-02559 and allows the use of the State Highway Department materials commonly used in this district.

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1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

TEXAS STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION (TSDH)

Standard Specifications for Construction of Highways, Streets and Bridges	1995 1993

OKLAHOMA STATE HIGHWAY COMMISSION (OSHC)

Standard Specifications for Highway Construction	Edition of 1988,with Supplement dated 1991

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 2995	(1993) Determining Application Rate of Bituminous Distributors

1.2 SUBMITTALS

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NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item should be required.

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Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01300SUBMITTAL DESCRIPTIONS:

SD-09 Reports

Field Quality Control; [_____]. Sampling and Testing; [_____].

Copies of test results shall be furnished to the Contracting Officer, as required in paragraph: Bituminous Material.

1.3 PLANT, EQUIPMENT, MACHINES AND TOOLS

1.3.1 General Requirements

All plant, equipment, machines and tools used in the work shall be subject to approval and shall be maintained in a satisfactory working condition at all times. The equipment shall be adequate and shall have the capability of producing the results specified.

1.3.2 Bituminous Distributor

The distributor shall have pneumatic tires of such size and number to prevent rutting, shoving, or otherwise damaging the base surface or other layers in the pavement structure. It shall be designed and equipped to spray the bituminous material in a uniform double or triple lap at the specified temperature, at readily determined and controlled rates with an allowable variation from the specified rate of not more than plus or minus 5 percent, and at variable widths. Distributor equipment shall include a separate power unit for the bitumen pump, full-circulation spray bars, tachometer, pressure gauges, volume-measuring devices, adequate heaters for heating of materials to the proper application temperature, a thermometer for reading the temperature of tank contents, and a hand hose attachment suitable for applying bituminous material manually to areas inaccessible to the distributor. The distributor shall be equipped to circulate and agitate the bituminous material during the heating process.

1.3.3 Power Brooms and Power Blowers

Power brooms and power blowers shall be suitable for cleaning the surfaces to which the prime coat is to be applied.

1.3.4 Storage Tanks

Tanks shall be capable of heating the bituminous material, under effective and positive control at all times, to the required temperature. Heating shall be accomplished by steam coils, hot oil, or electricity. An armored thermometer shall be affixed to the tank so that the temperature of the bituminous material may be read at all times.

1.4 WEATHER LIMITATIONS

The prime coat shall be applied only when the subgrade, subbase, or base course is dry enough to promote uniform coverage and the desired penetration into the treated surface. The prime coat shall be applied only when the atmospheric temperature in the shade is 10 degrees C 50 degrees F or above and when the temperature has not been below 2 degrees C 35 degrees F for the 12 hours prior to the application.

2 PRODUCTS

2.1 BITUMINOUS MATERIALS

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NOTE: Retain only the applicable State requirements.

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Cutback asphalt, grade MC-30 or MC-70, conforming to [TSDH Standard Specifications for Construction of Highways, Streets and Bridges for "Asphalts, Oils, and Emulsions," Item 300, except the measurement and payment paragraphs shall not apply.] [OSHC Standard Specification for Highway Construction "Asphalt Materials," Section 708.03.] Bituminous material delivered to the job shall come from a source approved for use by the [TSDH] [OSHC]. The seal number from the tank and a copy of the [TSDH] [OSHC] Laboratory test report shall accompany each shipment, or the Contractor shall furnish a test report certifying the material meets the specified requirements.

3 EXECUTION

3.1 PREPARATION OF SURFACE

Immediately before applying the prime coat, all loose material, dirt, clay, or other objectionable material shall be removed from the surface to be treated. To assure a uniform spread of the bituminous material, the portion of the subgrade, subbase, or base course prepared for treatment, if excessively dry, shall be lightly sprinkled with water immediately before the application, as directed.

3.2 PRIME COATING

3.2.1 Application Rate

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NOTE: The range of application rates for the bituminous materials is for the bituminous residue content and does not include water or solvents that are contained in emulsified or liquid bituminous materials. The use of liquid or emulsified material requires that the application rates be corrected. Any prescribed application shall be corrected. Any prescribed application shall be divided into two applications 24 hours apart when necessary to avoid flowing off the surface because of grade or slope.

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Bituminous material for the prime coat shall be applied in quantities of not less than 0.20 liter 0.05 gallon nor more than 0.70 liter per square meter 0.15 gallon per square yard of pavement surface. The exact quantities within the range specified, which may be varied to suit field conditions, will be determined by the Contracting Officer.

3.2.2 Application Temperature

NORMAL SPRAY APPLICATION TEMPERATURES FOR

MC-30	29-87 degrees C
MC-70	50-107 degrees C
MC-30	85-190 degrees F
MC-70	120-225 degrees F

Cutback asphalt application temperature shall provide an application viscosity between 10 and 60 seconds, Saybolt Furol, or between 20 and 120 sq mm/sec, 20 and 120 centistokes, kinematic. The temperature viscosity relation shall be furnished to the Contracting Officer.

These temperature ranges include or exceed the flash point of the material, and care should be taken in their heating.

3.2.3 Application

Following preparation and subsequent inspection of the surface, the prime coat shall be applied at the specified rate with uniform distribution over the surface to be treated. To obtain uniform application of the prime coat on the surface treated at the junction of previous and subsequent applications, building paper shall be spread on the surface for a sufficient distance back from the ends of each application so that the prime coat may be started and stopped on the paper. Immediately after application, the building paper shall be removed and destroyed. All areas and spots missed by the distributor shall be properly treated with the hand spray. Following application of the prime material, the surface shall be allowed to cure without being disturbed for a period of at least 48 hours or longer, as may be necessary to attain penetration into the treated course and evaporation of the volatiles from prime material. As directed, sand shall be spread to effectively blot up and cure any excess bituminous material. Until the succeeding layer of pavement is placed, the primed surface shall be maintained by protecting the surface against damage and by repairing and repriming deficient areas at no additional cost to the Government. No smoking, fire, or flames other than the heaters that are a part of the equipment shall be permitted within 25 feet of heating, distributing, or transferring operation for bituminous materials other than emulsions.

3.3 FIELD QUALITY CONTROL

Samples of the bituminous material used will be obtained by the Contractor as directed, under the supervision of the Contracting Officer. The sample will be retained and tested by the Government at no cost to the Contractor.

3.4 SAMPLING AND TESTING

3.3.1 Initial Sampling and Testing

3.3.1.1 Calibration Test

The Contractor shall furnish all equipment, materials, and labor necessary to calibrate the bituminous distributor. Calibration shall be made with the approved job material and prior to applying the prime coat material to the prepared surface. Calibration of the bituminous distributor shall be in accordance with ASTM D 2995.

3.3.1.2 Trial Applications

As a preliminary to providing the complete prime coat, three lengths of at least 30 meters 100 feet for the full width of the distributor bar shall be primed to evaluate the amount of prime that can be satisfactorily applied.

Unless otherwise authorized, the trial application rate of bituminous materials shall be applied in the amount of 1.14 liters per square meter 0.25 gallon per square yard. Other trial applications shall be made using various amounts of material as may be deemed necessary.

3.3.2 Sampling and Testing During Construction

Quality control sampling and testing shall be performed as required in paragraph "FIELD QUALITY CONTROL."